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Claims

1. An imaging system comprising:
 - a group pixel comprising two or more photodetectors for providing two or more corresponding pixel image signals; and
 - a summer coupled to each of the two or more photodetectors for outputting an aggregate image signal based on the two or more corresponding pixel image signals.
2. The imaging system of claim 1 wherein the summer comprises an analog-to-digital converter.
3. An imaging system comprising:
 - a group pixel comprising two or more photodetector circuits for providing two or more corresponding pixel image signals, with each photodetector circuit having a photodiode and occupying a surface area less than 50 square microns; and
 - a summer coupled to each of the two or more photodetectors for outputting an aggregate image signal based on the two or more corresponding pixel image signals.
4. The imaging system of claim 3 wherein the summer comprises an analog-to-digital converter.
5. An imaging system comprising:
 - a group pixel comprising two or more photodetector circuits for providing two or more corresponding pixel image signals, with each photodetector circuit occupying a surface area less than 30 square microns and comprising:
 - a source-follower transistor have a gate, source, and drain;
 - a ground node; and

a photodiode coupled between the gate of the source-follower transistor and the ground node; and
a summer coupled to each of the two or more photodetectors for outputting an aggregate image signal based on the two or more corresponding pixel image signals.

6. The imaging system of claim 5 wherein the summer comprises an analog-to-digital converter.

7. An imaging system comprising:
a group pixel comprising two or more photodetectors for providing two or more corresponding pixel image signals;
a summer responsive to the two or more corresponding pixel image signals for outputting an aggregate image signal;
a variable-gain amplifier responsive to the aggregate image signal for outputting an amplified aggregate image signal based on an adjustable amplifier gain; and
an automatic gain controller for adjusting the adjustable amplifier gain based on the aggregate image signal.

8. The imaging system of claim 7 wherein the summer comprises an analog-to-digital converter.

9. The imaging system of claim 7 wherein the variable-gain amplifier is a digital amplifier.

10. An imaging system comprising:
a group pixel comprising two or more photodetectors for providing two or more corresponding pixel image signals;

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a summer responsive to the two or more corresponding pixel image signals for outputting an aggregate image signal;
a variable-gain amplifier responsive to the aggregate image signal for outputting an amplified aggregate image signal based on an adjustable amplifier gain; and
an automatic gain controller for adjusting the adjustable amplifier gain based on the amplified aggregate image signal.

11. The imaging system of claim 10 wherein the summer comprises an analog-to-digital converter.

12. The imaging system of claim 10 wherein the variable-gain amplifier is a digital amplifier.

13. An imaging system comprising:
two or more group pixels comprising two or more photodetector circuits for providing two or more corresponding pixel image signals, with each photodetector circuit having a surface area less than 50 square microns and comprising:
a source-follower transistor have a gate, source, and drain;
a ground node; and
a photodiode coupled between the gate of the source-follower transistor and the ground node;
a summer responsive to two or more of the corresponding pixel image signals for outputting an aggregate image signal;
a variable-gain amplifier responsive to the aggregate image signal for outputting an amplified aggregate image signal based on an adjustable amplifier gain; and
an automatic gain controller for adjusting the adjustable amplifier gain based on the aggregate image signal.

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14. The imaging system of claim 13 wherein the summer comprises an analog-to-digital converter.

15. The imaging system of claim 13 wherein the variable-gain amplifier is a digital amplifier.

16. An imaging system comprising:
two or more group pixels comprising two or more photodetector circuits for providing two or more corresponding pixel image signals, with each photodetector circuit having a surface area less than 50 square microns and comprising:
a source-follower transistor have a gate, source, and drain;
a ground node; and
a photodiode coupled between the gate of the source-follower transistor and the ground node;
a summer responsive to two or more of the corresponding pixel image signals for outputting an aggregate image signal;
a variable gain amplifier responsive to the aggregate image signal for outputting an amplified aggregate image signal based on an adjustable amplifier gain; and
an automatic gain controller for adjusting the adjustable amplifier gain based on the amplified aggregate image signal.

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17. The imaging system of claim 16 wherein the summer comprises an analog-to-digital converter.

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18. The imaging system of claim 16 wherein the variable-gain amplifier is a digital amplifier.

19. An imaging system comprising:
two or more group pixels comprising two or more photodetector circuits for providing two or more corresponding pixel image signals, with each photodetector circuit having a surface area less than 50 square microns and comprising:
a source-follower transistor have a gate, source, and drain;
a ground node; and
a photodiode coupled between the gate of the source-follower transistor and the ground node;
a summer having an output responsive to two or more of the corresponding pixel image signals for outputting an aggregate image signal;
a variable-gain amplifier having an input, an output, and a gain-control terminal, with the input operatively coupled to the output of the summer;
an automatic gain controller having an input coupled to the output of the variable-gain amplifier and having an output operatively coupled to the gain-control terminal of the variable-gain amplifier.

20. The imaging system of claim 19 wherein the summer comprises an analog-to-digital converter.

21. The imaging system of claim 19 wherein the variable-gain amplifier is a digital amplifier.

22. A method for compensating for defective or malfunctioning photodetectors in an imaging array, comprising:

aggregating two or more image signals to define an aggregate image signal;
comparing the aggregate image signal to a reference; and
amplifying the aggregate image signal based on results of comparing the aggregate image signal to the reference.

23. A method comprising:
aggregating two or more image signals to define an aggregate image signal;
and
determining a number of defective or non-defective pixels based on the
aggregate image signal.
24. A method comprising:
aggregating two or more image signals to define an aggregate image signal;
determining a number of defective or non-defective pixels based on the
aggregate image signal; and
amplifying the aggregate image signal based on the determined number of
defective or non-defective pixels.
25. A method comprising:
means for aggregating two or more image signals to define an aggregate
image signal;
means for determining a number of defective or non-defective pixels based
on the aggregate image signal; and
means for amplifying the aggregate image signal based on the determined
number of defective or non-defective pixels.
26. An image system comprising:
means for aggregating two or more image signals to define an aggregate
image signal; and
means for determining a number of defective or non-defective pixels based
on the aggregate image signal.
27. A method comprising:
means for aggregating two or more image signals to define an aggregate
image signal;

